

**DRAFT
CHARGE TO REVIEWERS**

**Peer Review Draft of:
U.S. EPA's HUMAN HEALTH RISK ASSESSMENT PROTOCOL
FOR HAZARDOUS WASTE COMBUSTION FACILITIES**

The peer review draft U.S. EPA guidance entitled *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (HHRAP) (EPA530-D-98-001A), dated July 1998, is a three volume set of guidance on how to perform risk assessments at hazardous waste combustion facilities. The HHRAP has been developed as national guidance to consolidate information presented in other risk assessment guidance and methodology documents previously prepared by U.S. EPA and state environmental agencies. In addition, the HHRAP also addresses issues that have been identified while conducting risk assessments for existing hazardous waste combustion units. The HHRAP is intended as guidance for conducting risk assessments, and an information resource for permit writers, risk managers, and community relations personnel.

External peer reviewers have been selected representing scientific disciplines generally covered in the HHRAP. These scientific disciplines consist of combustion engineering, air dispersion modeling, fate and transport, exposure assessment, and toxicology. As a reviewer, you should use your best technical knowledge and professional judgment to consider and provide comment on the technical accuracy, completeness and scientific soundness of your charged review. In addition, it is extremely important to not only comment on inadequacies but also to recommend a specific solution or alternative. It is also imperative that the reviewer remember the intended use of the guidance when developing recommendations. Each reviewer is asked to focus on several specific issues in his or her area of expertise with comments on other areas invited but optional. Your comments and recommendations will be considered in finalizing the HHRAP.

All reviewers should be familiar with the Introduction (Chapter 1). In addition, each reviewer should focus on specific chapters and /or volumes that correspond to subject matter specified in their respective charged review. The charge consists of general and specific technical issues provided for consideration

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and written comment. In considering limits to schedule and resources, each reviewer should first focus on addressing the charged specific technical issues, with response to general issues being provided as time and resources allows.

General Issues

In addition to providing review and comment on assigned specific technical issues, each reviewer should also address the following general issues, as applicable:

1. Comment on the organization of the section reviewed. Is the presentation of information clear and concise considering the technical complexity of the subject and intended audience?
2. Does the purpose of the HHRAP as stated in the Introduction (Chapter 1) accurately reflect the presented methodologies and scope?
3. As with any risk assessment, there are always additional data and method development efforts that could be undertaken to reduce the level of uncertainty. However, are there any major data or methodological gaps within this guidance specific to the sections reviewed that would preclude using for regulatory decision making? If so, how should they be addressed?
4. What long-term research would you recommend that could significantly improve risk assessments of this type in the future?

Specific Technical Issues

The reviewer is charged with considering and providing written comment and recommendations on specific technical issues generally defined as being within the scientific discipline of human health exposure. These specific technical issues were identified through public comment as being significant and requiring additional external review. The reviewer should be familiar with the sections of the HHRAP referenced within the technical issue.

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1. Comments were received concerning definition and use of the 95th percentile emission rate in the risk assessment (Section 2.2). Is the guidance on quantifying emission rates of compounds for use in the risk assessment adequate and scientifically sound? Should the guidance specify use of the 95th percentile or 95th upper confidence limit (UCL) of the mean?
2. Comments were received regarding guidance presented for quantifying non-detect compounds when estimating stack emission rates (Section 2.4). Is the guidance on quantifying non-detect compounds for use in the risk assessment adequate and scientifically sound? Should additional guidance be provided regarding what risk management factors are to be considered if the risk for a non-detected compounds exceeds a regulatory trigger level?
3. Comments were received regarding guidance presented for inclusion of the “unknown” or unspiciated total organic emission (TOE) data when estimating stack emission rates (Section 2.2.1.3). Given the objectives of the HHRAP and limitations associated with analyses of stack gas, is the guidance on inclusion of TOE data in the risk assessment adequate and scientifically sound? How much weight should be given to risks and uncertainties resulting from the “unknown” portion of the emissions when making risk management decisions?
4. Comments were received regarding guidance presented for speciating and modeling of mercury in the risk assessment (Section 2.3.8.3; Appendix B; and Appendix C). Review and comment on the technical validity of key elements of mercury modeling, including (1) quantitative modeling of mercury species concentrations to the appropriate water body compartments (i.e., water column, sediment, dissolved water column, etc.) considering how the concentrations are used in evaluating exposure, (2) the assumption that an insignificant transfer of divalent mercury to fish tissue occurs, and therefore, the BAF for divalent mercury (represented in the HHRAP as mercuric chloride) can be assumed to be zero, and (3) assuming that the sum of the divalent and methyl mercury fish concentrations is 100 percent methyl mercury for purposes of determining potential risk.
5. Comments were received regarding the recommended determination and application of biotransfer (*Ba*) values (Chapter 5; Appendix A-3; and Appendix B). Review and comment on the technical validity of guidance presented for application of *Ba* values, including (1) *Ba_{egg}* values for di-n-octylphthalate, polycyclic aromatic hydrocarbons (PAHs), and hexachlorophene, (2) *Ba_{beef}* and *Ba_{milk}* values for highly lipophilic compounds, (3) *Ba_{pork}* values for non-ruminants, and (4) *Bv* values for lipophilic compounds such as PAHs and dioxins. Are the equations presented in Travis and Arms (1988) and Baes et al. (1984) for the estimation of *Ba* values appropriate as applied in the guidance for calculating exposure concentrations in plants and tissue? Considering how

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the applicable *BCF* values reported in Stephens et al. (1995) were determined, should the total feed consumption rate of 0.2 kg/day be multiplied by the fraction of feed that is soil (0.1) before calculating the $Ba_{chicken}$ and Ba_{egg} values for dioxins? Does application of the recommended *Ba* values violate conservation of the mass of contaminants emitted to mass concentrated in tissue (exposure concentration)?

6. Comments were received regarding not including the water ingestion by cows as a potential COPC uptake mechanism (Sections 4.2 and 5.4). Should ingestion of contaminated water by cows be included in the calculation of exposure concentrations in beef and milk? If ingestion of contaminated water by cows is included as a pathway, will adjustments to the recommended Ba_{beef} and Ba_{milk} values be required?